AMSAT News Service Weekly Bulletins
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SB ALL @ AMSAT $ANS-139.01
ZRO TEST SCHEDULE ANNOUNCED

HR AMSAT NEWS SERVICE BULLETIN 139.01 FROM AMSAT HQ
SILVER SPRING, MD MAY 19, 1990
TO ALL RADIO AMATEURS BT

Station Receiving Tests Schedule Announced

The ZRO Memorial Technical Achievement Award Program, or "ZRO Test" will be reactivated in late May following the mid-May reorientation of AMSAT-OSCAR-13. This activity is a test of operating skill and equipment performance.

During a typical ZRO run, a control station will send numeric code groups using CW at 10 words-per-minute. At the beginning of the run, uplink power from the control station is set so that the downlink matches the general beacon downlink strength. This is level "zero". The control operator will send and repeat a random five-digit number, then lower uplink power by 3 dB (half power) and repeat the procedure with a new random number. This pattern is repeated until a level 27 dB below the beacon is reached (level "nine").

A participating listener monitors the downlink signals until they can no longer copy the numbers. Those who can hear the beacon will qualify for the basic award by copying the code group heard at level "zero". The challenge is to improve receiving station performance to a point where the lower level downlink signals can be copied (levels 6 through 9).

The following schedule of Mode "B" and "JL" ZRO tests were chosen for convenient operating times and favorable squint angles. The "B" tests can be heard on 145.840 MHz and the "JL" tests on 435.945 MHz.

| | | |
|---|---|---|
| Saturday | May 26, 1990 at 2230 UTC | "JL" |
| Sunday | May 27, 1990 at 0010 UTC | "B" |
| Sunday | June 03, 1990 at 0210 UTC | "JL" |
| Sunday | June 03, 1990 at 0350 UTC | "B" |
| Saturday | June 16, 1990 at 2200 UTC | "JL" |
| Saturday | June 16, 1990 at 2340 UTC | "B" |
| Saturday | June 30, 1990 at 1840 UTC | "JL" |
| Saturday | June 30, 1990 at 1930 UTC | "B" |

Any changes will be announced as soon as possible via the AMSAT HF and AO-13 Operations Nets. Recently updated ZRO brochures are available from WA5ZIB, Andy MacAllister, AMSAT V.P. User Operations, 14714 Knightsway Drive, Houston, TX 77083 for an S.A.S.E. with two units of postage. The brochure describes test procedures and means for obtaining certificates and gives some historical background about the program.

All listener reports with date of test and numbers copied should be sent to WA5ZIB at the address above. A report will be returned verifying the level of accurate reception. Good luck!

/EX
SB ALL @ AMSAT $ANS-139.02
PHASE 3A REMEMBERED, PART I

HR AMSAT NEWS SERVICE BULLETIN 139.02 FROM AMSAT HQ
SILVER SPRING, MD MAY 19, 1990

TO ALL RADIO AMATEURS BT

PHASE 3A Lost Ten Years Ago May 23, 1980, Part I

Next Wednesday marks the tenth anniversary of the death of an OSCAR -- an OSCAR which had all the potential of being a great satellite. On May 23, 1980 Phase 3A sat atop the Ariane launch vehicle known as LO-2, attach sideways to the huge Max Planck Institute's Firewheel experiment (See ORBIT June/July '80, pg 9). On that day optimism was running high at the European Space Agency's Kourou, Fr. Guianna launch center because of a previous launch success, and there was no reason to think that LO-2 wouldn't be equally successful. For those who are straining to remember, AMSAT President Tom Clark (W3IWI) was giving the "play-by-play-action" from the Goddard Space Flight Center (GSFC) radio club station, WA3NAN, to radio amateurs around the world through the AMSAT Launch Information Net/Service (ALINS). The launch window opened at 11:30 UTC; because of intermittent rain showers and minor equipment malfunctions "holds" were common during the first hours of the launch window. Finally, the LO-2 vehicle lifted off at 14:29:40 UTC. At this point thousands of hams were holding their breaths as FY7KRU and WA3NAN provided the commentary on the last few moments Phase 3A's short life: at 14:32:57 UTC French controllers were heard saying things like: "non-nominal flying...problem in one engine...the rocket is going down...Kourou radar still tracking" and finally, the worst shock of all, the word "splashdown" was uttered. Phase 3A never reached orbit and the greatness it was destined for. Jan King, holding back tears, summed it up shortly after the launch failure when he said that "the [radio amateur] community will never know what they lost today."

/EX
SB ALL @ AMSAT $ANS-139.03
PHASE 3A, REMEMBERED PART II

HR AMSAT NEWS SERVICE BULLETIN 139.03 FROM AMSAT HQ
SILVER SPRING, MD MAY 19, 1990
TO ALL RADIO AMATEURS BT

Phase 3A Lost Ten Years Ago May 23, 1980, Part II

Jan, Tom, and many of the volunteers who had helped build Phase 3A listened with great sadness as they realized that the focus of many thousands of hours of effort (Jan estimated 30 man years!) was now sitting at the bottom of the Atlantic. Jan recently related the events of that day to WD0HHU saying that upon realizing what had happened he flung a very large book across the room and shouted something appropriate at the top of his lungs. Now, however, he says he doesn't recall what he said -- it is all a "blurr." It should be noted that Jan and the other volunteers were not very far from the tiny little building on the GSFC grounds where Phase 3A was built, integrated, and tested.

According to Tom Clark, "the gloom, despair, and depression lasted for about a day" when Jan and Karl Miezer (DJ4ZC) were heard saying: "Darn it! We worked to hard to quit now. Lets try again. Lighting can't strike twice." At that point Tom wrote to all the AMSAT members requesting their moral and financal support in order to start Phase 3B. The reponse was immediate: over $30,000 was raised in a few months to start the construction of Phase 3B. This unequivocal show of support proved that radio amateurs from around the world wanted to see the AMSAT OSCAR satellite program continue. Recovering quickly from this disaster, AMSAT volunteers realized they still had the knowledge and know-how to build another OSCAR satellite and another: Phase 3B became AO-10, and later, Phase 3C became AO-13.

This week, May 23, 1990, one decade later, take a moment to think about Phase 3A, at 14:36:38 UTC when mission controllers in Kourou announced a "splashdown."

/EX

SB ALL @ AMSAT $ANS-139.04
UO-14 9600 BAUD UPDATE

HR AMSAT NEWS SERVICE BULLETIN 139.04 FROM AMSAT HQ
SILVER SPRING, MD MAY 19, 1990
TO ALL RADIO AMATEURS BT

TNC operations at 9600 bps

Jeff Ward G0/K8KA and other members of the University of Surrey Engineering Team have recently been experimenting with 9600-baud operation using KISS software on TNC-2 clones. The clones used are a Pac-Com TINY-2 and an MFJ 1270. Initially, a version of KISS dated "26 Mar 87" was used but it was found that this version did not work very well for near-full-duplex 9600-baud KISS operation.

Jeff et. al. upgraded the firmware in the TNCs to a version of KISS dated "20 Mar 88". They found that operating on either the Pac-Com or the MFJ TNC with the updated KISS firmware will correctly receive a continuous stream of 9600 baud packets and relay them to the host computer at 9600 baud. The TNC did not seem to drop packets, even when operating at the 2 MHz standard clock speed. It is believed that this is the version of KISS which shipped with the current TAPR firmware version 1.1.7.

Jeff reports that, unfortunately, with a 9600 baud synchronous input stream and a 9600 baud asynchronous output stream, the TNC's buffers begin to fill up. When the buffer fills (after a minute or so), the TNC crashes. An extra long packet is passed to the host, and operation (on the async side) ceases. You can cure this by turning the async link up to 19.2 kbps - if your host hardware and software can keep up.

Recently, the UoS Engineering Team received a version of KISS firmware dated "11 Dec 89". This version seems not to crash when presented with a continuous 9600 baud input stream and 9600 baud async speed. A setup running this code ran successfully for a number of hours. Unfortunately, this version of the firmware cannot keep up with the input stream unless the TNC clock rate is increased to 4 MHz. If a 2 MHz clock is used, approximately 50% of the packets on a BTTW 9600 baud downlink will be missed.

Jeff concludes: "Get KISS dated "11 Dec 89" or later, jump your TNC-2 clock rate up (using JMP2), and wait for further entertainment as we try full-duplex, full-duty cycle 9600 baud connected mode in a month or so."

[AMSAT thanks Jeff Ward G0/K8KA for the information for this bulletin]

/EX
SB ALL @ AMSAT $ANS-139.05
OPERATIONS NET SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 139.05 FROM AMSAT HQ
SILVER SPRING, MD MAY 19, 1990
TO ALL RADIO AMATEURS BT

AMSAT-NA Operations Net Schedule Announced

AMSAT Operations Nets are planned for the following times. Mode B nets are conducted on an AO-13 downlink frequency of 145.950. Mode J/L nets are conducted on an AO-13 downlink frequency of 435.970.

| Date UTC | Time | Phs | Mode | NCS | U.S. Day |
|---|---|---|---|---|---|
| 24 May 90 | 0145 | 104 | J/L | WB9ANQ | Wednesday |

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04 Jun 90  0100  104  J/L   N5BF  Sunday
15 Jun 90  0115  104  J/L   N5BF  Thursday
26 Jun 90  0115  144  B     N5BF  Monday

For information on the amateur satellite program and how you can participate,
contact AMSAT-NA at P.O. Box 27, Washington, DC 20044, phone (301) 589-6062,
or contact your local AMSAT Area Coordinator.

/EX
SB ALL @ AMSAT   $ANS-139.06
AO-13 TRANSPONDER SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 139.06 FROM AMSAT HQ
SILVER SPRING, MD MAY 19, 1990
TO ALL RADIO AMATEURS BT

Transponder Schedule for AO-13 Effective 05MAY90

The present transponder schedule for AO-13 is as follows:


         Mode-B          : MA 000 to MA 100
         Mode-JL         : MA 100 to MA 125
         Mode-LS         : MA 125 to MA 130  (Mode S Beacon only)
         Mode-S          : MA 130 to MA 135
         Mode-BS         : MA 135 to MA 140
         Mode-B          : MA 140 to MA 256
         Omnis           : MA 220 to MA 040

The best estimate of the current attitude is:

                     BLON = 180  and  BLAT = +3   for 05 May 90

More exact values will be announced soon.  Only the Mode-L transponder and the
Mode-S beacon will be on from MA 125 to MA 130.  Cross mode B and S QSOs are
possible during MA 135 to 140.

AO-10's Mode-B Transponder Now Available for Use:

AMSAT-OSCAR-10 appears to be receiving sufficient solar panel
illumination to support Mode-B transponder operations, therefore,
the transponder is available for general use whenever AO-10
is in view at your location.  Please DO NOT use the transponder
if the signals are FMing. The current estimate of AO-10's attitude
is LON 24 deg LAT -9 deg.

[AO-10 update received from Graham Ratcliff, VK5AGR, via AO-13 beacons.]

/EX


Posted: Wed, May 23, 1990   3:47 AM GMT             Msg: GGJA-4268-4161
From:   TCLARK
To:     is
Subj:   SAREX.006 & .007 Bulletins


SB SAREX @ AMSAT < W3IWI $SAREX.006
SAREX Btn #6: WA4SIR-? Call Clarification

SAREX BULLETIN SAREX.006
de W3IWI May 23,1990

Concerning the WA4SIR-? call for SAREX ROBOT operations: In the articles
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in the AMSAT JOURNAL and 73 MAGAZINE, it was indicated that the SAREX ROBOT would use the call WA4SIR-1 (i.e. using a SSID = 1), and in more recent SAREX @ AMSAT packet bulletins it was indicated that the call would just be just WA4SIR (i.e. SSID = 0); several people sent messages indicating that they were confused.

Both the HK21 ROBOT TNC and the operational software for the GRID laptop computer have the calls defaulted to WA4SIR (SSID = 0) and that call should be used unless, for some unanticipated reason, the defaults are over-ridden.

The best advice is for you to MONITOR the downlink signals from STS-35 and use whatever call you see on the downlink. The ROBOT TNC code uses only one SSID at a time.

/EX
SB SAREX @ AMSAT < W3IWI $SAREX.007
SAREX Btn #7: Some comments on timers

SAREX BULLETIN SAREX.007
de W3IWI May 23,1990

This note is to give you some additional information on timers involved in sequencing ROBOT packet transmissions.

Because the WA4SIR SAREX ROBOT will be bombarded with signals from tens or hundreds of ground-based users when STS-35 is flying over populated areas, it is not possible for the ROBOT TNC and radio to use normal half-duplex packet procedures -- the CD (carrier detect) signal will simply never drop!

The ROBOT will be running in a modified full-duplex mode. When the ROBOT copies a valid packet frame (or when it is time to send a beacon), the data to be sent is put into a buffer and a timer (which we call the FUDtimer) is started. The ROBOT firmware then queues all other outgoing transmissions in the buffer until FUDtimer expires (3 seconds later), and all downlink frames in the queue are sent in one long transmission. Many who had QSOs with the SAREX demo station at the AMSAT or HEATH booths at Dayton commented on how sluggish the 3 second FUDtimer seemed to be when compared to normal packet operations.

Since the SAREX handheld radio cannot receive when it is transmitting, users should insure that they remain silent and listen when the shuttle is transmitting. In other words, DO NOT RUN FULL DUPLEX ON THE GROUND! Leave your TNC in half-duplex mode (FULLDUP OFF) with CD active just like you do for normal VHF packet operations.

However you should be careful with the setting of two of your TNC's timers -- DWAIT and FRACK. DWAIT is the time interval after your Carrier Detect light goes out and before your transmitter turns on. You want to make sure your connects requests and acks are contained in the 3 second FUDtimer window. If everybody runs the same DWAIT (like the typical 0.1 - 0.5 second values used for terrestrial packet), then everybody will be transmitting at the time. Part of the key to your success when uplink QRM is heavy is to pick a DWAIT that nobody else is using!

FRACK sets the time interval between your transmissions. After you send a frame, your TNC waits for the FRACK time, and then waits for the Carrier Detect signal to drop, then waits DWAIT, and then tries again. You should make sure your FRACK is at least 3 seconds so that you are not transmitting when the ROBOT's FUDtimer decides it is time for it to transmit -- if you are transmitting at the same time, you will miss any packets the shuttle is addressing to you and you won't have a successful QSO.

Note that your DWAIT (how soon do I transmit?) and FRACK (then how long

do I wait?) parameters and the need to stop transmitting so you can hear
a reply are just like you encounter when working a DXpedition pileup on HF.
If the DX station has a pattern of listening for a few seconds (=FUDtimer)
before transmitting, you may have better luck being the LAST station he
hears, after the din dies down.  The differences are that (1) the ROBOT
is a computer and is very predictable and (2) the ROBOT can be working
several stations at one time.

WA4SIR's SAREX mission on STS-35 is the ultimate DXpedition!
/EX

Posted: Fri, May 25, 1990   3:03 AM GMT              Msg: LGJA-4270-7634
From:   TCLARK
To:     is
Subj:   SAREX.008: NASA SETS LAUNCH DATE

SB SAREX @ AMSAT < W3IWI $SAREX.008
SAREX Btn 8: NASA Announces Launch Date

SAREX Bulletin AREX.008
de W3IWI May 24,1990

Late this afternoon NASA released the following announcement concerning
next week's launch of the Shuttle Columbia with WA4SIR and the SAREX
hardware:

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"STS-35 FLIGHT READINESS REVIEW STATEMENT   5/24/90  5:10P.M. EDT"

NASA managers today set May 30 as the launch date for Shuttle
Mission STS-35 which will carry the Astro-1 payload into orbit.
Columbia will be launched during a window that opens at 12:38
a.m. EDT and extends for 2 1/2 hours.  The mission is scheduled
to last 10 days. Landing is set for 4:24 p.m. PDT on June 8."
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The May 30 at 12:38 AM EDT = 04:38z launch window is the same as was
indicated in our SAREX.005 bulletin released May 20th. That bulletin
contains the predicted Keplerian element set JSC-0011 which will apply
for a nominal launch at the time the window opens.

We plan to circulate a bulletin this weekend (probably SAREX.009) which
will contain a more detailed time-line for the SAREX activities.
/EX

Posted: Sun, May 27, 1990   3:02 AM GMT              Msg: HGJA-4272-3958
From:   TCLARK
To:     is
CC:     sarex
Subj:   SAREX.009 Bulletin: Operating Schedule

SB SAREX @ AMSAT < W3IWI $SAREX.009
SAREX Btn 9: Operations Timeline

SAREX Bulletin SAREX.009
de W3IWI May 27, 1990

This table details planned events for Ron Parise, WA4SIR's SAREX activities
on the STS-35 mission of the Shuttle Columbia. The tabular entries are given
in both Mission Elapsed Time (MET) and UTC (GMT) time. If the launch is

delayed from May 30th at 04:38z, the all UTC times should be adjusted accordingly. All times are approximate and should only be used for guidance.

In general Ron's voice opportunities for scheduled demonstrations all take place during the pre-sleep and post-sleep periods. The planned classroom demonstrations to be relayed via Australia and Brazil are denoted by the (VK) and (PY) windows. Any time Ron might choose to try general voice operation should also be during the pre- and post-sleep windows. Ron must also eat and take care of personal matters during these pre- and post-sleep periods.

SAREX ROBOT packet operations are planned for the approximately 12 hour windows between the post- and pre-sleep while Ron is on duty with the ASTRO experiments.

| | | | MISSION ELAPSED TIME | | | |
|---|---|---|---|---|---|---|
| UTC DATE | FROM HH:MM | -TO- HH:MM | DAY # | FROM HH:MM | DAY # | -TO- HH:MM | ACTIVITY |
| 30-May | 04:38 | | 0d | 00:00 | | | NOMINAL LAUNCH |
| 30-May | 15:08 | - 15:38 | 0d | 10:30 | - 0d | 11:00 | Pre-Sleep, no activity |
| 30-May | 23:38 | - 02:23 | 0d | 19:00 | - 0d | 21:45 | Post-Sleep |
| 30-May | 23:38 | - 01:18 | 0d | 19:00 | - 0d | 20:40 | Setup SAREX |
| 31-May | 01:03 | - 01:18 | 0d | 20:25 | - 0d | 20:40 | Demo #0 (VK) |
| 31-May | 01:23 | - 14:58 | 0d | 20:45 | - 1d | 10:20 | SAREX ROBOT |
| 31-May | 14:58 | - 16:38 | 1d | 10:20 | - 1d | 12:00 | Pre-Sleep |
| 31-May | 14:58 | - 15:08 | 1d | 10:20 | - 1d | 10:30 | Demo #1 (PY) |
| 01-Jun | 01:00 | - 01:53 | 1d | 20:22 | - 1d | 21:15 | Post-Sleep |
| 01-Jun | 01:53 | - 13:38 | 1d | 21:15 | - 2d | 09:00 | SAREX ROBOT |
| 01-Jun | 13:13 | - 15:08 | 2d | 08:35 | - 2d | 10:30 | Pre-Sleep |
| 01-Jun | 13:48 | - 14:03 | 2d | 09:10 | - 2d | 09:25 | Demo #2 (PY) |
| 01-Jun | 23:08 | - 00:38 | 2d | 18:30 | - 2d | 20:00 | Post-Sleep |
| 02-Jun | 00:18 | - 00:38 | 2d | 19:40 | - 2d | 20:00 | Demo #3 (VK) |
| 02-Jun | 00:38 | - 12:33 | 2d | 20:00 | - 3d | 07:55 | SAREX ROBOT |
| 02-Jun | 12:30 | - 14:08 | 3d | 07:52 | - 3d | 09:30 | Pre-Sleep |
| 02-Jun | 12:38 | - 12:48 | 3d | 08:00 | - 3d | 08:10 | Demo #4 (PY) |
| 02-Jun | 22:08 | - 23:38 | 3d | 17:30 | - 3d | 19:00 | Post-Sleep |
| 02-Jun | 23:08 | - 23:28 | 3d | 18:30 | - 3d | 18:50 | Demo #5 (VK) |
| 02-Jun | 14:38 | - 11:33 | 3d | 10:00 | - 4d | 06:55 | SAREX ROBOT |
| 03-Jun | 11:18 | - 13:08 | 4d | 06:40 | - 4d | 08:30 | Pre-Sleep |
| 03-Jun | 13:03 | - 13:18 | 4d | 08:25 | - 4d | 08:40 | Demo #6 (PY) |
| 03-Jun | 21:08 | - 22:53 | 4d | 16:30 | - 4d | 18:15 | Post-Sleep |
| 03-Jun | 21:53 | - 22:13 | 4d | 17:15 | - 4d | 17:35 | Demo #7 (VK) |
| 03-Jun | 22:38 | - 10:38 | 4d | 18:00 | - 5d | 06:00 | SAREX ROBOT |
| 04-Jun | 10:23 | - 12:38 | 5d | 05:45 | - 5d | 08:00 | Pre-Sleep |
| 04-Jun | 11:58 | - 12:08 | 5d | 07:20 | - 5d | 07:30 | Demo #11 (PY) |
| 04-Jun | 21:38 | - 21:58 | 5d | 17:00 | - 5d | 17:20 | Post-Sleep |
| 04-Jun | 21:58 | - 10:38 | 5d | 17:20 | - 6d | 06:00 | SAREX ROBOT |
| 05-Jun | 10:23 | - 12:38 | 6d | 05:45 | - 6d | 08:00 | Pre-Sleep |
| 05-Jun | 12:18 | - 12:33 | 6d | 07:40 | - 6d | 07:55 | Demo #8 (PY) |
| 05-Jun | 20:38 | - 21:15 | 6d | 16:00 | - 6d | 16:37 | Post-Sleep |
| 05-Jun | 21:08 | - 10:43 | 6d | 16:30 | - 7d | 06:05 | SAREX ROBOT |
| 06-Jun | 10:38 | - 11:38 | 7d | 06:00 | - 7d | 07:00 | Pre-Sleep |
| 06-Jun | 19:38 | - 22:28 | 7d | 15:00 | - 7d | 17:50 | Post-Sleep |
| 06-Jun | 19:58 | - 20:18 | 7d | 15:20 | - 7d | 15:40 | Demo #9 (VK) |

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06-Jun 21:38 - 21:58 | 7d+17:00 - 7d+17:20 | Demo #10 (VK)
06-Jun 22:08 - 09:23 | 7d+17:30 - 8d+04:45 | SAREX ROBOT
                     |                     |
07-Jun 09:23         | 8d+04:45            | QRT & Stow Hardware
07-Jun 19:33         | 8d+14:55            | Begin De-Orbit
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This material was compiled by W3IWI with inputs from W3XO, WA4SIR and W5DID.
It is provided for guidance only and is in no way an offical list.

Check your local packet BBS for bulletins addressed to SAREX @ AMSAT and
listen to WA3NAN, W5RRR and W6VIO for updates during the mission.
/EX